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# U. S. NAVAL AIR MATERIAL CENTER

PHILADELPHIA, PENNSYLVANIA

## 297 240

AERONAUTICAL ENGINE LABORATORY

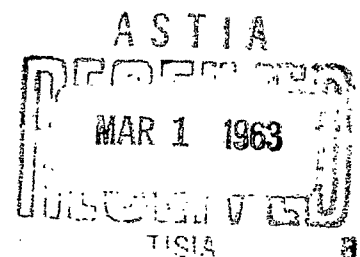
NAEC-AEL-1726

27 FEB 1963

QUALIFICATION TESTS OF INTERNATIONAL LUBRICANT  
CORPORATION GRADE 1100 ILC CODE 14206 AND ILC CODE 14207  
AIRCRAFT ENGINE LUBRICATING OILS

FINAL REPORT ON  
WEPTASK P. A. NAM-RAPP-41012.3  
BY  
C. J. COLLICK

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## INTRODUCTION

1. As authorized by the Bureau of Naval Weapons letter RAPP-411/81:TM of 10 November 1962, qualification testing was conducted by the Aeronautical Engine Laboratory, Naval Air Engineering Center on International Lubricants Corporation grade 1100, ILC code 14206 and ILC code 14207, aircraft engine lubricating oils to determine their conformity to specification MIL-L-6082C. The following test samples were submitted under WEPTASK P. A. NAM-RAPP-41012.3:

<u>Amount</u>	<u>Identification</u>	<u>Source</u>	<u>Date of Receipt</u>
1-1 gal can	International Lubricants Corp. Grade 1100 Aviation Engine Oil Qual. Test Sample ILC-14206 No. 62-1218 (No Pour Point Depressant)	International Lubricants Corp. New Orleans, U.S.A.	11-15-62
2-5 gal cans	International Lubricants Corp. Grade 1100 Aviation Engine Oil Qual. Test Sample ILC-14206	International Lubricants Corp. New Orleans, U.S.A.	11-15-62
1-1 gal can	International Lubricants Corp. Grade 1100 Aviation Engine Oil Qual. Test Sample ILC-14207 No. 62-1215 (No Pour Point Depressant)	International Lubricants Corp. New Orleans, U.S.A.	11-15-62
2-5 gal cans	International Lubricants Corp. Grade 1100 Aviation Engine Oil Qual. Test Sample ILC-14207	International Lubricants Corp. New Orleans, U.S.A.	11-15-62

## CONCLUSIONS

2. The International Lubricants Corporation Grade 1100 ILC code 14206 and ILC code 14207 aircraft engine oils meet the requirements of specification MIL-L-6082C.

## RECOMMENDATIONS


3. It is recommended that the International Lubricants Corporation Grade 1100, ILC code 14206 and ILC code 14207, aircraft engine oils be placed on the Qualified Products List of oils qualified under specification MIL-L-6082C.

#### ANALYSIS OF RESULTS AND DISCUSSION

4. The work values and work factors of the oil samples, calculated by Method 3451.1 of Federal Test Method Standard No. 791, are listed in tables I and II. Work Factor Values for the 100-hr samples, 0.90 for ILC-Code 14206 and 0.92 for ILC-Code 14207, exceed the minimum requirement of 0.85 of the specification. The work factor machine data are shown in tables III and IV.

5. The physical and chemical properties of the samples, ILC-14206 and ILC-14207, are shown in tables V and VI respectively (0 hour data). These data indicate that both oils pass the physical and chemical requirements of specification MIL-L-6082C.

  
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TABLE I

Manufacturer's Designation - ILC-Code 14206

<u>Sample Time - Hours</u>	<u>25</u>	<u>50</u>	<u>75</u>	<u>100</u>
Viscosity work value at 210°F	0.94	0.92	0.92	0.90
Viscosity work value at 130°F	0.88	0.86	0.80	0.73
Viscosity work value at 100°F	0.88	0.84	0.78	0.73
Average viscosity work value	0.90	0.87	0.83	0.79
Neutralization number work value	1.00	1.00	0.99	0.98
Carbon residue work value	0.97	0.96	0.95	0.93
Work factor	0.96	0.94	0.92	0.90

TABLE II

Manufacturer's Designation - ILC-Code 14207

<u>Sample Time - Hours</u>	<u>25</u>	<u>50</u>	<u>75</u>	<u>100</u>
Viscosity work value at 210°F	0.96	0.94	0.91	0.89
Viscosity work value at 130°F	0.92	0.90	0.87	0.83
Viscosity work value at 100°F	0.94	0.90	0.86	0.81
Average viscosity work value	0.94	0.91	0.88	0.84
Neutralization number work value	1.00	1.00	1.00	1.00
Carbon residue work value	0.95	0.95	0.92	0.91
Work factor	0.96	0.95	0.93	0.92



TABLE III

WORK FACTOR MACHINE DATA

Manufacturer's Designation - ILC-Code 14206	
Work Factor Machine No.	1
Duration of Test, Hours	100
Journal Speed, RPM	3000
Bearing Temperature °F	278
Oil Inlet Temperature °F	190
Oil Pressure to Bearing, PSIG	15
Bearing Pressure, PSI	150
Bearing Film Pressure, PSIG	290
Condition of Bearing at End of Test	Satisfactory

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TABLE IV

WORK FACTOR MACHINE DATA

Manufacturer's Designation - ILC-Code 14207	
Work Factor Machine No.	2
Duration of Test, Hours	100
Journal Speed, RPM	3000
Bearing Temperature °F	303
Oil Inlet Temperature °F	160
Oil Pressure to Bearing, PSIG	15
Bearing Pressure, PSI	150
Bearing Film Pressure, PSIG	210
Condition of Bearing at End of Test	Satisfactory

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**TABLE V**  
**Physical & Chemical Properties**

**Manufacturer's Sample Designation** - International Lubricants Corporation Grade 1100 Oil - Code 14206  
**AEL Sample Designation** 7260 7307 7308 7309 7310

Property	Result					Requirement
	0	25	50	75	100	
Time - Hours						
Gravity, Specific 60/60°F	0.8849					
Gravity, °API 60/60°F	28.4					
Neutralization No., Colorimetric	0.08	0.08	0.08	0.10	0.12	0.10 max
Neutralization No., Potentiometric	0.09	0.09	0.18	0.19	0.26	
Saponification No.	0.12					0.5 max
Flotation No., Sedimentation	0.000					0.005 max
Neutrality, Qualitative	Neutral					Neutral
Viscosity, S.U.S. 210°F	97.60	98.75	99.09	99.22	99.56	93-103
Viscosity, S.U.S. 130°F	475.7	487.2	489.2	495.0	501.5	
Viscosity, S.U.S. 100°F	1161	1189	1197	1211	1224	
Viscosity Index	98.5					95 min
Carbon Residue, Conradson % wt.	0.26	0.32	0.35	0.36	0.40	1.2 max
Carbon Residue, Ramsbottom % wt.	0.25	0.29	0.33	0.34	0.34	
Ash Content % wt.	0.0005					0.0025 max
Flash Point °F	485					470 min
Fire Point °F	520					
Pour Point °F	5					10 max
Diluted Pour Point °F	-75					-65 max
Free and Corrosive Sulfur	1					1 max
Sulfur % wt.	0.19					0.5 max
Contamination mg/kgal	14.8					15 max

**TABLE VI**  
**Physical & Chemical Properties**

Manufacturer's Sample Designation - International Lubricants Corporation Grade 1100 Oil - Code 14207  
API Sample Designation 7261 7283 7285 7286

Property	Result					Requirement
	0	25	50	75	100	O(No Pour Depressant)
Gravity, Specific 60/60°F	0.8838					
Gravity, API 60/60°F	28.6					
Neutralization No. Colorimetric	0.08	0.08	0.08	0.08	0.08	0.10 max
Neutralization No. Potentiometric	0.10	0.10	0.14	0.16	0.25	
Saponification No.	0.09					0.5 max
Precipitation No. Sedimentation	0.000					0.005 max
Neutrality, Qualitative	Neutral					Neutral
Viscosity, S.U.S. 210°F	96.88	97.60	98.11	98.67	99.09	93-103
Viscosity, S.U.S. 130°F	473.1	480.3	482.9	485.8	489.5	
Viscosity, S.U.S. 100°F	1154	1167	1176	1187	1198	1147
Viscosity Index	97.9					95 min
Carbon Residue, Conradson % wt.	0.17	0.28	0.29	0.34	0.36	1.2 max
Carbon Residue, Ramsbottom % wt.	0.25	0.27	0.29	0.29	0.29	
Ash Content % wt.	0.0005					0.0025 max
Flash Point of	480					470 min
Fire Point of	515					
Pour Point of	5				10	10 max
Diluted Pour Point of	-75					-65 max
Free and Corrosive Sulfur	1					1 max
Sulfur % wt.	0.11					0.5 max
Contamination mg/lx-gal	12.3					15 max

<p>U. S. NAVAL AIR ENGINEERING CENTER AERONAUTICAL ENGINE LABORATORY</p> <p>Qualification Tests of International Lubricant Corporation Grade 1100 ILC-Code 14206 and ILC-Code 14207 Aircraft Engine Lubricating Oils</p> <p>By G. J. Collick      FEB 1963</p> <p>This report presents the results of the qualification tests (as required by specification MIL-L-6082C) of the International Lubricants Corporation (Grade 1100) ILC-Code 14206 and ILC-Code 14207 aviation engine oils. The lubricants meet the requirements of the specification and are recommended for inclusion on the Qualified Products List of the specification.</p>	<p>1. Report NAEC-AEL-1726 2. WEPTASK P.A. NAE-RAPP 41012.3</p>
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